



## PATENT ABSTRACTS OF JAPAN

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(72) Inventor: **HATA CHIEKO**  
**HARA KOICHI**  
**IZUMITANI TETSUO**

(54) **FORMATION OF ANTIREFLECTION FILM  
 RESISTANT TO LASER DAMAGE AND HAVING  
 HIGH WEAR RESISTANCE ON OPTICAL  
 ELEMENT SURFACE**

## (57) Abstract:

PURPOSE: To obtain the titled antireflection film resistant to laser damage and having high resistance to wear by mixing a metallic alcoholate into the dispersion of colloidal silica in an org. solvent or water, hydrolyzing and partially condensation-polymerizing a liq. mixture obtained by dissolving the mixture in an org. solvent to obtain a sol soln., coating the sol soln. on the surface of an optical element and heat-treating the element.

CONSTITUTION: One or <sup>3</sup>2 kinds of metallic

alcoholates is mixed into the dispersion of colloidal silica in water or an org. solvent, the mixture is dissolved in an org. solvent and the liq. mixture is hydrolyzed and partially condensation-polymerized to obtain a sol soln. The sol soln. is coated on the surface of an optical element and the element is heat-treated. Consequently, a vitreous coated film contg. silica fine particles is formed on the surface of the optical element. The coated film acts as an antireflection film having high resistance to wear and resistant to laser damage. A substance expressed by the formula,  $\text{Me}(\text{OR})_n$  (Me is a metallic element such as Si, Al, Na and B and R is an alkyl group such as  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ ,  $\text{C}_3\text{H}_5$ ,  $\text{C}_3\text{H}_7$  and  $\text{C}_4\text{H}_9$ ). is preferably used as the metallic alcoholate.

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